NATIONAL GUIDELINE CLEARINGHOUSE™ (NGC) GUIDELINE SYNTHESIS

SCREENING FOR LUNG CANCER

Guidelines

1. American Cancer Society (ACS). Update 2001--Testing for early lung cancer detection. In: American Cancer Society guidelines for the early detection of cancer. CA Cancer J Clin 2001 Jan-Feb;51(1):38-75. [181 references]
2. American College of Chest Physicians (ACCP). Screening for lung cancer: the guidelines. Chest 2003 Jan;123(1 Suppl):83S-8S. [19 references]
3. Canadian Task Force on Preventive Health Care (CTFPHC). Screening for lung cancer: updated recommendations from the Canadian Task Force on Preventive Health Care. London (ON): Canadian Task Force on Preventive Health Care (CTFPHC); 2003 Aug. 22 p. [28 references]
4. U.S. Preventive Services Task Force (USPSTF). Lung cancer screening: recommendation statement. Ann Intern Med 2004 May 4;140(9):738-9. [2 references]

TABLE OF CONTENTS

INTRODUCTION

A direct comparison of American Cancer Society (ACS), American College of Chest Physicians (ACCP), Canadian Task Force on Preventive Health Care (CTFPHC), and U.S. Preventive Services Task Force (USPSTF) recommendations for lung cancer screening in asymptomatic patients is provided in the tables below. The guidelines differ somewhat in scope and focus, with some of the guidelines offering recommendations beyond screening. For example, ACCP's lung cancer screening

guideline represents just one chapter from a more comprehensive guideline supplement including recommendations related to lung cancer prevention, diagnosis, initial evaluation and staging, treatment, follow-up/surveillance, palliative treatment, and end of life care. ACS's guideline includes a discussion of detection methods such as fluorescence bronchoscopy and molecular screening, in addition to chest x-ray, sputum cytology, and low-dose computed tomography scanning (the interventions compared in this synthesis).

ACS released its guidance on early lung cancer detection in response to recommendations resulting from the 1998 International Conference on the Prevention and Early Diagnosis of Lung Cancer held in Varese, Italy which called for "national governments and public health organizations involved in cancer prevention and control to more aggressively address tobacco control and to urgently consider the issues surrounding the early detection of lung cancer."

ACCP, CTFPHC, and USPSTF each considered the 2001 ACS guidelines when developing and/or updating their own recommendations. ACCP also reviewed USPSTF's 1996 recommendations (which are an older version of the guideline currently represented in this synthesis); CTFPHC likewise reviewed USPSTF's 1996 recommendations as well as ACCP's current guideline. USPSTF refers readers to recommendations issued by CTFPHC and ACS.

Table 1 below presents the scope of the guidelines, comparing the objectives, target populations, intended users, and screening interventions included in the synthesis. Table 2 compares recommendations regarding chest x-rays, sputum cytology, and low dose computed tomography scanning as diagnostic and imaging tools in screening for lung cancer. Table 3 specifies the potential benefits and harms associated with routine screening for lung cancer in asymptomatic patients.

The level of evidence supporting the major recommendations is also identified, with the definitions of the rating schemes used by ACCP, CTFPHC, and USPSTF included in Table 4. References supporting selected recommendations for the CTFPHC guidelines are also provided in this table. ACS describes in narrative form, the evidence associated with its recommendations.

Following the content comparison tables, the areas of agreement and differences among the guidelines are identified.

Excluded from this synthesis are recommendations for patients who are symptomatic or have a history of cancer.

Listed below are common abbreviations used within the tables and discussions:

- ACCP, American College of Chest Physicians
- ACS, American Cancer Society
- CT, computed tomography
- CTFPHC, Canadian Task Force on Preventive Health Care
- CXR, Chest x-ray
- LDCT, low-dose computed tomography (i.e., spiral or helical computed tomography)
- USPSTF, United States Preventive Services Task Force

TABLE 1: COMPARISON OF SCOPE AND CONTENT	
Objective and Scope	
ACS (2001)	• To update health care professionals and the public on issues regarding testing for early lung cancer detection in light of emerging data on new imaging technologies
ACCP (2003)	• To provide clinically relevant, evidence-based guidelines for the early detection of lung cancer
CTFPHC (2003)	• To update the 1994 recommendations of the Canadian Task Force of Preventive Health care for lung cancer screening • To make recommendations on the effectiveness of chest radiographic examination and spiral computed tomography (CT) for lung cancer screening in asymptomatic patients
USPSTF (2004)	• To summarize the current U.S. Preventive Services Task Force (USPSTF) recommendation on screening for lung cancer and the supporting scientific evidence • To update the 1996 recommendations contained in the Guide to Clinical Preventive Services, second edition
Target Population	
ACS (2001)	• United States • Individuals at risk for the development of lung cancer, including current and/or former smokers
ACCP (2003)	• United States • Individuals at risk for lung cancer but without symptoms or a history of cancer
CTFPHC (2003)	• Canada • Asymptomatic adults with a history of smoking with no previous history of lung cancer
USPSTF (2004)	• United States

	• Asymptomatic persons seen in primary care settings
Intended Users	
ACS (2001)	Advanced Practice Nurses; Allied Health Personnel; Health Care Providers; Health Plans; Hospitals; Managed Care Organizations; Nurses; Patients; Physician Assistants; Physicians; Public Health Departments
ACCP (2003)	Physicians (mainly primary care and pulmonary specialists)
CTFPHC (2003)	Advanced Practice Nurses; Allied Health Personnel; Physician Assistants; Physicians
USPSTF (2004)	Advanced Practice Nurses; Allied Health Personnel; Nurses; Physician Assistants; Physicians
Screening Interventions and Practices Considered	
ACS (2001)	Screening interventions considered but not recommended: • CXR • LDCT (i.e., spiral or helical computed tomography) • Sputum cytology • Other early detection methods, including molecular screening and fluorescence bronchoscopy Screening intervention considered and recommended only in the context of well-designed clinical trials: • LDCT
ACCP (2003)	Screening interventions considered but not recommended: • CXR • Sputum cytology Screening intervention considered and recommended only in the context of well-designed clinical trials: • LDCT
CTFPHC (2003)	Screening interventions considered but not recommended:

	• CXR • Spiral computed tomography scan
USPSTF (2004)	Screening interventions considered but not recommended: • CXR • Sputum cytology • LDCT • Combination of these tests

TABLE 2: COMPARISON OF RECOMMENDATIONS FOR LUNG CANCER SCREENING	
ACS (2001)	• The ACS does not recommend lung cancer screening for asymptomatic individuals at risk for lung cancer. • However, individual physicians and patients may decide that the evidence is sufficient to warrant the use of screening tests on an individual basis. • The ACS recommends that, to the extent possible, individuals at risk for lung cancer due to current or prior smoking history, history of significant exposure to second-hand smoke, or occupational history be aware of their continuing lung cancer risk. Those who seek testing for early lung cancer detection should be informed about what is currently known about the benefits, limitations, and risks associated with conventional and emerging early detection technologies, as well as the associated diagnostic procedures and treatment. • Current technologies for detecting early lung cancer include imaging modalities (CXR, LDCT) and cytological and molecular evaluations of lung sputum. • Results from screening studies using spiral CT have been regarded as sufficiently encouraging to lead a growing number of institutions and facilities to promote CT screening to asymptomatic individuals at risk for lung cancer, with such promotion likely to increase. Since both media reports and local advertising may stimulate interest in spiral CT testing among health care providers and individuals at higher risk, the ACS has determined that updated guidance about early lung cancer detection is appropriate. • Given the high rate of positive results that occur with CT screening for lung cancer and the complexity of the algorithm for working up small nodules, there is reason to be concerned about broad dissemination of lung screening outside of experienced, multi-specialty settings and prior to validation of this new technology. For this reason, it is critically important during this period of evolving investigations into the efficacy of spiral CT and other

	modalities that appropriate and influential professional organizations provide a foundation for best practices based upon the current state-of-the art, and also promote informed decision-making for patients about possible benefits, risks, and limitations of testing for early lung cancer detection. Individuals interested in early detection also should be encouraged to participate in trials.
ACCP (2003)	Chest X-ray For individuals without symptoms or a history of cancer, the guideline developers recommend against the use of serial CXRs to screen for the presence of lung cancer. Level of evidence, good; benefit, none or negative; grade of recommendation, D Sputum Cytology For individuals without either symptoms or a history of cancer, the guideline developers recommend against the use of single or serial sputum cytologic evaluation to screen for the presence of lung cancer. Level of evidence, fair; benefit, none or negative; grade of recommendation, D Low Dose Computed Tomography For individuals without symptoms or a history of cancer, the guideline developers recommend against the use of a single LDCT or serial LDCTs to screen for the presence of lung cancer. At-risk individuals who express an interest in undergoing LDCT scan screening should be made aware of several ongoing high quality clinical studies of this technology. Level of evidence, poor; benefit, none or negative; grade of recommendation, I
CTFPHC (2003)	Chest X-ray The CTFPHC concludes that there is fair evidence to recommend against screening asymptomatic people for lung cancer using chest radiographic examination. (D recommendation) (Manser et al., 2002 [I, fair]; Kubik, Parkin, & Zatloukal, 2000 [I, fair]; Marcus et al., 2000 [I, fair]; Nishii et al., 2001 [II-2, fair]; Okamoto et al., 1999 [II-2, fair]; Sagawa et al., 2001 [II-2, fair]; Sobue, 2000 [II-2, fair]; Tsukada et al., 2001 [II-2, fair]). Low Dose Computed Tomography The CTFPHC concludes that there is insufficient evidence (in quantity and/or quality) to make a recommendation as to whether spiral CT scanning should be used for screening asymptomatic people for lung cancer. However, other factors may influence decision-making. (I recommendation). (Henschke et al., 1999; Henschke et al., 2001;

	Sone et al., 1998; Sone et al., 2001; Diederich et al., 2000 [II-2, III]).
USPSTF (2004)	The USPSTF concludes that the evidence is insufficient to recommend for or against screening asymptomatic persons for lung cancer with either LDCT, CXR, sputum cytology, or a combination of these tests. I recommendation Clinical Considerations • The benefit of screening for lung cancer has not been established in any group, including asymptomatic high-risk populations such as older smokers. The balance of harms and benefits becomes increasingly unfavorable for persons at lower risk, such as nonsmokers. • The sensitivity of LDCT for detecting lung cancer is 4 times greater than the sensitivity of CXR. However, LDCT is also associated with a greater number of false-positive results, more radiation exposure, and increased costs compared with CXR. • Because of the high rate of false-positive results, many patients will undergo invasive diagnostic procedures as a result of lung cancer screening. Although the morbidity and mortality rates from these procedures in asymptomatic individuals are not available, mortality rates because of complications from surgical interventions in symptomatic patients reportedly range from 1.3 to 11.6%; morbidity rates range from 8.8 to 44%, with higher rates associated with larger resections. • Other potential harms of screening are potential anxiety and concern as a result of false-positive tests, as well as possible false reassurance because of false-negative results. However, these harms have not been adequately studied.

TABLE 3: BENEFITS AND HARMS OF LUNG CANCER SCREENING	
Potential Benefits	
ACS (2001)	Reduced mortality associated with lung cancer.
ACCP (2003)	Appropriate use of lung cancer screening, based on shared, informed decision making between provider and patient. These guidelines should complement that process by providing the evidence on relative merits of the available screening approaches.
CTFPHC (2003)	Appropriate use of lung cancer screening in asymptomatic

	people may result in the following: • Decreased number of false-positives associated with screening tests • Decreased risk of invasive diagnostic procedures to confirm suspicious or false-positive findings • Prevention of exposure of the patient to unnecessary radiation • Prevention of decreased motivation to stop smoking if a false-negative result is obtained Additional potential benefits of specific screening procedures: Spiral CT scanning provides the hope of a more sensitive screening test than CXR, and prospective studies have demonstrated an improved detection of smaller lesions. However, it is unclear whether improved detection will lead to improved mortality.
USPSTF (2004)	The USPSTF found fair evidence that screening with LDCT, CXR, or sputum cytology can detect lung cancer at an earlier stage than lung cancer would be detected in an unscreened population; however, the USPSTF found poor evidence that any screening strategy for lung cancer decreases mortality.
Potential Harms	
ACS (2001)	Not stated
ACCP (2003)	Although studies of LDCT based on observational designs appear promising, in that LDCT detects a preponderance of early stage lesions, a similar pattern accompanied the early studies of CXR and sputum cytology. The fact that prior randomized studies of CXR and sputum cytology, related autopsy series, and preliminary findings in LDCT studies all raise concerns that some cancers detected by LDCT are overdiagnosed elevates the importance of proper evaluation of the technology. In addition, concerns about false positives and unnecessary treatment raise the possibility that even if LDCT leads to an improvement in lung cancer mortality through early detection, the test may in aggregate lead to greater harm than benefit.
CTFPHC (2003)	Potential Harms of Not Screening May miss detection of early stage lung cancer Potential Harms of Screening In one reported study, 50% of positive CXRs were not suspicious for cancer on spiral CT and, from RCTs, even suspicious CXRs are often false positives after diagnostic workup (positive predictive values ranging from 41%-60%). Nevertheless, spiral CT picks up many more

	lesions, and 90-92% of "positive" CT scans turn out not to be cancerous. These patients are exposed not only to radiation, but also to the anxiety and risks involved in having a suspicious finding confirmed by invasive diagnostic procedures. The biopsy rate for spiral CT ranges from 11-12%, 24-26% of which prove to be non-cancerous. Another study reported that 18 CT scans were either falsely read as negative or did not pick up a cancer detected by sputum cytology, leading to a false negative rate of 45% of spiral CT. False negatives carry with them a false reassurance and a risk that the patient will be less motivated to quit smoking.
USPSTF (2004)	• Because of the invasive nature of diagnostic testing and the possibility of a high number of false-positive tests in certain populations, there is potential for significant harms from screening. Therefore, the USPSTF could not determine the balance between the benefits and harms of screening for lung cancer. • Other potential harms of screening are potential anxiety and concern as a result of false-positive tests, as well as possible false reassurance because of false-negative results. However, these harms have not been adequately studied.

TABLE 4: EVIDENCE RATING SCHEMES AND REFERENCES	
ACCP (2003)	Levels of Evidence (based on the USPSTF scheme) Good In general, good evidence included prospective, controlled, randomized clinical trials. Poor Poor evidence included case series and clinical experience. Fair Trials with fair quality of evidence, for instance, historically controlled trials or retrospective analyses, were somewhere in between. Grades of Recommendations and Estimates of Net Benefit The grade of the strength of recommendations is based on both the quality of the evidence and the net benefit of the service (i.e., test,

	procedure, etc). Grade A - The panel strongly recommends that clinicians routinely provide [the service] to eligible patients. An "A" recommendation indicates good evidence that [the service] improves important health outcomes and that benefits substantially outweigh harms. Grade B - The panel recommends that clinicians routinely provide [the service] to eligible patients. A "B" recommendation indicates at least fair evidence that [the service] improves important health outcomes and concludes that benefits outweigh harms. Grade C - The panel recommends that clinicians routinely provide [the service] to eligible patients. A "C" recommendation indicates that there was consensus among the panel to recommend [the service] but that the evidence that [the service] is effective is lacking, of poor quality, or conflicting, or the balance of benefits and harms cannot be reliably determined from available evidence. Grade D - The panel recommends against clinicians routinely providing [the service]. A "D" recommendation indicates at least fair evidence that [the service] is ineffective or that harm outweighs benefit. Grade I - The panel concludes that the evidence is insufficient to recommend for or against [the service]. An "I" recommendation indicates that evidence that [the service] is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined, and that the panel lacked a consensus to recommend it. Net Benefit The levels of net benefit are based on clinical assessment. Estimated net benefit may be downgraded based on uncertainty in estimates of benefits and harms. Substantial Benefit: Benefit greatly outweighs harm. Moderate Benefit: Benefit outweighs harm. Small/weak Benefit: Benefit outweighs harm to a minimally clinically important degree. None/negative Benefit: Harms equal or outweigh benefit, less than clinically important.
CTFPHC (2003)	Levels of Evidence - Research Design Rating

	I: Evidence from randomized controlled trials (RCT) II-1: Evidence from controlled trials without randomization II-2: Evidence from cohort or case-control analytic studies, preferably from more than 1 centre or research group II-3: Evidence from comparisons between times or places with or without the intervention; dramatic results in uncontrolled experiments could also be included here III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees Quality (Internal Validity) Rating Good: A study that meets all design-specific criteria* well Fair: A study that does not meet (or it is not clear that it meets) at least one design-specific criterion* but has no known "fatal flaw" Poor: A study that has at least one design-specific* "fatal flaw," or an accumulation of lesser flaws to the extent that the results of the study are not deemed able to inform recommendations *General design-specific criteria are outlined in Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow CD, Teutsch SM, Atkins D. Current Methods of the U.S. Preventive Services Task Force: A Review of the Process. Am J Prev Med 2001;20(suppl 3):21-35. Recommendations Grades for Specific Clinical Preventive Actions A: The Canadian Task Force (CTF) concludes that there is good evidence to recommend the clinical preventive action. B: The CTF concludes that there is fair evidence to recommend the clinical preventive action. C: The CTF concludes that the existing evidence is conflicting and does not allow making a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making. D: The CTF concludes that there is fair evidence to recommend against the clinical preventive action. E: The CTF concludes that there is good evidence to recommend

against the clinical preventive action.

I: The CTF concludes that there is insufficient evidence (in quantity and/or quality) to make a recommendation; however, other factors may influence decision-making.

References

- Diederich S, Wormanns D, Lenzen H, Semik M, Thomas M, Peters PE. Screening for asymptomatic early bronchogenic carcinoma with low dose CT of the chest. Cancer 2000 Dec 1;89(11 Suppl):2483-4. PubMed
- Henschke CI, McCauley DI, Yankelevitz DF, Naidich DP, McGuinness G, Miettinen OS, Libby DM, Pasmantier MW, Koizumi J, Altorki NK, Smith JP. Early lung cancer action project: overall design and findings from baseline screening. Lancet 1999 Jul 10;354(9173):99-105. PubMed
- Henschke CI, Naidich DP, Yankelevitz DF, McGuinness G, McCauley DI, Smith JP, Libby D, Pasmantier M, Vazquez M, Koizumi J, Flieder D, Altorki N, Miettinen OS. Early lung cancer action project: initial findings on repeat screenings. Cancer 2001 Jul 1;92(1):153-9. PubMed
- Kubik AK, Parkin DM, Zatloukal P. Czech Study on Lung Cancer Screening: post-trial follow-up of lung cancer deaths up to year 15 since enrollment. Cancer 2000 Dec 1;89(11 Suppl):2363-8. PubMed
- Manser RL, Irving LB, Stone C, Byrnes G, Abramson M, Campbell D. Screening for lung cancer (Cochrane Review). In: The Cochrane Library [database online]. Issue 4. Oxford: Update Software; 2002
- Marcus PM, Bergstralh EJ, Fagerstrom RM, Williams DE, Fontana R, Taylor WF, Prorok PC. Lung cancer mortality in the Mayo Lung Project: impact of extended follow-up. J Natl Cancer Inst 2000 Aug 16;92(16):1308-16. PubMed
- Nishii K, Ueoka H, Kiura K, Kodani T, Tabata M, Shibayama T, Gemba K, Kitajima T, Hiraki A, Kawaraya M, Nakayama T, Harada M. A case-control study of lung cancer screening in Okayama Prefecture, Japan. Lung Cancer 2001 Dec;34(3):325-32. PubMed
- Okamoto N, Suzuki T, Hasegawa H, Gotoh T, Hagiwara S, Sekimoto M, Kaneko M. Evaluation of a clinic-based screening program for lung cancer with a case-control design in Kanagawa, Japan. Lung Cancer 1999 Aug;25(2):77-85. PubMed
- Sagawa M, Tsubono Y, Saito Y, Sato M, Tsuji I, Takahashi S, Usuda K, Tanita T, Kondo T, Fujimura S. A case-control study for evaluating the efficacy of mass screening program for lung cancer in Miyagi Prefecture, Japan. Cancer 2001 Aug 1;92(3):588-94. PubMed
- Sobue T. A case-control study for evaluating lung cancer screening in Japan. Cancer 2000 Dec 1;89(11 Suppl):2392-6. PubMed
- Sone S, Li F, Yang ZG, Honda T, Maruyama Y, Takashima S, Hasegawa M, Kawakami S, Kubo K, Haniuda M, Yamanda T. Results of three-year mass screening programme for lung cancer

	using mobile low-dose spiral computed tomography scanner. Br J Cancer 2001 Jan 5;84(1):25-32. PubMed • Sone S, Takashima S, Li F, Yang Z, Honda T, Maruyama Y, Hasegawa M, Yamanda T, Kubo K, Hanamura K, Asakura K. Mass screening for lung cancer with mobile spiral computed tomography scanner. Lancet 1998 Apr 25;351(9111):1242-5. PubMed • Tsukada H, Kurita Y, Yokoyama A, Wakai S, Nakayama T, Sagawa M, Misawa H. An evaluation of screening for lung cancer in Niigata Prefecture, Japan: a population-based case-control study. Br J Cancer 2001 Nov 2;85(9):1326-31. PubMed
USPSTF (2004)	The USPSTF grades the quality of the overall evidence for a service on a 3-point scale (good, fair, poor): Good Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes. Fair Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies, generalizability to routine practice, or indirect nature of the evidence on health outcomes. Poor Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes. The USPSTF grades its recommendations according to one of 5 classifications (A, B, C, D, I) reflecting the strength of evidence and magnitude of net benefit (benefits minus harms): A The USPSTF strongly recommends that clinicians provide [the service] to eligible patients. The USPSTF found good evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms. B The USPSTF recommends that clinicians provide [the service] to

	eligible patients. The USPSTF found at least fair evidence that [the service] improves important health outcomes and concludes that benefits outweigh harms. C The USPSTF makes no recommendation for or against routine provision of [the service]. The USPSTF found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms is too close to justify a general recommendation. D The USPSTF recommends against routinely providing [the service] to asymptomatic patients. The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits. I The USPSTF concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. Evidence that [the service] is effective is lacking, of poor quality, or conflicting and the balance of benefits and harms cannot be determined.

GUIDELINE CONTENT COMPARISON

The American Cancer Society (ACS), American College of Chest Physicians (ACCP), Canadian Task Force on Preventive Health Care (CTFPHC) and the U.S. Preventive Services Task Force (USPSTF) present recommendations for screening for lung cancer based on evidence available at the time of each report and provide explicit reasoning behind their judgments. ACCP, CTFPHC, and USPSTF rate the quality of their recommendations and the type of evidence supporting them; CTFPHC also provides literature citations to support their major recommendations. ACS recommendations are provided in narrative form. Both ACCP and USPSTF include a review of the evidence supporting their recommendations. ACCP, CTFPHC, and USPSTF all provide comparisons with other national guidelines, including ACS's recommendations.

Areas of Agreement

ACS, ACCP, CTFPHC, and USPSTF are in general agreement regarding the inappropriateness of routine lung cancer screening in asymptomatic individuals. ACS specifically recommends against any routine screening, while the other three make recommendations based on specific diagnostic tests. All guidelines note the need for more research into the effectiveness of screening for lung cancer, most notably, randomized controlled trials on LDCT. ACS, ACCP, and USPSTF all mention the ongoing National Cancer Institute's Prostate, Lung, Colorectal, and

Ovarian (PLCO) Cancer Screening Trial as a prospective study that may eventually provide additional insight.

Chest X-ray

None of the four guidelines recommends CXR to screen for lung cancer in asymptomatic patients. Both ACCP and CTFPHC explicitly recommend against screening for lung cancer with CXR, while USPSTF concludes that there is insufficient evidence to recommend for or against screening for lung cancer with chest x-ray. Although ACS makes no specific recommendations concerning CXR, they do not recommend any routine screening, though they note that individual patients and physicians may decide that the evidence warrants screening on an individual basis.

Low-Dose Computed Tomography

All four guidelines agree directly or indirectly that LDCT is more sensitive than CXR in detecting lung cancer. Each group however, acknowledges that this greater test sensitivity may be associated with a higher rate of false positives, which may result in the use of additional diagnostic procedures that carry a significant risk of harms. Each of the guidelines further note that currently, the evidence is not yet sufficient to determine whether or not detection of smaller lung cancers with LDCT reduces lung cancer mortality.

ACCP recommends against the routine use of LDCT and urges that patients should be made aware of ongoing clinical trials concerning this technology. CTFPHC and USPSTF conclude that there is insufficient evidence to recommend for or against the use of LDCT to screen asymptomatic patients at risk for lung cancer. ACS expresses concern that this technology may disseminate broadly before the technology is validated and encourages individuals interested in early detection to participate in clinical trials.

Sputum Cytology

None of the four guidelines recommend the use of sputum cytology for screening for lung cancer. ACCP explicitly recommends against its use, while USPSTF finds insufficient evidence to recommend for or against the technology. ACS further notes that one disadvantage of this technology is that positive test results require additional testing to identify location of the cancer. CTFPHC offers no recommendations regarding sputum cytology.

Smoking Cessation - Primary Prevention

While not described in the table above, it is important to note that all of the developers included in this comparison emphasize that smoking cessation is the best way to reduce lung cancer mortality at this time.

Areas of Differences

While all four guidelines are in general agreement about the lack of evidence supporting the efficacy of lung cancer screening, ACS makes a distinction between

its recommendation against mass screening and decisions made by individual patients and their doctors, noting that their recommendations are not intended to discourage individuals from having early detection tests if they and their doctors determine that testing is appropriate. However, ACS notes that because of increasing availability and promotion of testing, it is critically important that individuals who are interested in testing understand both the potential benefits of screening with LDCT, as well as potential harms associated with diagnostic procedures and treatment. ACS offers guidance for patients and their doctors, and discourages testing in a setting that is not linked to multidisciplinary specialty groups for diagnosis and follow-up. ACS further states that individuals who decide to undergo testing should have access to state-of-the art testing and follow-up.

ACCP also notes that the election to screen an individual who is at risk for lung cancer should be based on shared, informed decision making between provider and patient.

This Synthesis was prepared by ECRI on October 8, 2005. This synthesis was verified by: CTFPHC on November 2, 2005; ACCP on November 28, 2005; USPSTF on November 30, 2005; and ACS on December 2, 2005.

Internet citation: National Guideline Clearinghouse (NGC). Guideline synthesis: Screening for lung cancer. In: National Guideline Clearinghouse (NGC) [website]. Rockville (MD): 2005 Dec. [cited YYYY Mon DD]. Available: http://www.guideline.gov.

© 1998-2005 National Guideline Clearinghouse

Date Modified: 12/12/2005